

L Number	Hits	Search Text	DB	Time stamp
1	31046	(light adj emitting) with device	USPAT;	2004/05/27
2	18514	((light adj emitting) with device) and @ad<20000605	US-PGPUB	13:03
3	260	((((light adj emitting) with device) and @ad<20000605) and yamazaki	USPAT;	2004/05/27
4	152	((((light adj emitting) with device) and @ad<20000605) and yamazaki) and electrode	US-PGPUB	12:39
5	76	(((((light adj emitting) with device) and @ad<20000605) and yamazaki) and electrode) and mask	USPAT;	2004/05/27
6	76	(((((light adj emitting) with device) and @ad<20000605) and yamazaki) and electrode) not ((((((light adj emitting) with device) and @ad<20000605) and yamazaki) and electrode) and mask)	US-PGPUB	12:39
7	76	(((((light adj emitting) with device) and @ad<20000605) and yamazaki) and electrode) and mask	USPAT;	2004/05/27
8	1475	((((light adj emitting) with device) and @ad<20000605) and electrode and mask	US-PGPUB	12:40
9	100	(((((light adj emitting) with device) and @ad<20000605) and electrode and mask) and (second adj conductive)	USPAT;	2004/05/27
10	33859	(light adj emitting) with device	US-PGPUB	12:58
11	201	((light adj emitting) with device) and electrode and mask	EPO; JPO; DERWENT; IBM TDB	2004/05/27
12	1375	(((((light adj emitting) with device) and @ad<20000605) and electrode and mask) not ((((((light adj emitting) with device) and @ad<20000605) and electrode and mask) and (second adj conductive))	EPO; JPO; DERWENT; IBM TDB	13:03
			USPAT;	2004/05/27
			US-PGPUB	13:15

US-PAT-NO:

6277679

DOCUMENT-IDENTIFIER:

US 6277679 B1

TITLE:

transistor Method of manufacturing thin film

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Abstract Text - ABTX (1):

The object of the present invention is to form a low-concentration impurity region with good accuracy in a top gate type TFT. Phosphorus is added to a semiconductor layer by using a pattern made of a conductive film as a mask to form an N-type impurity region in a self-alignment manner. A positive photoresist is applied to a substrate so as to cover the pattern and then is exposed to light applied to the back of the substrate and then is developed, whereby a photoresist 110 is formed. The pattern is etched by using the photoresist pattern as an etching mask to form a gate electrode. A channel forming region, a source region, a drain region, and low-concentration impurity regions, are formed in the semiconductor layer in a self-alignment manner by using the gate electrode as a doping mask.

Brief Summary Text - BSTX (5):

A thin film transistor (hereinafter referred to as a TFT) is utilized for the switching element of a pixel electrode of an active matrix type liquid crystal display device. As the demand for a high-definition liquid crystal display grows, the semiconductor layer of the TFT is required to be formed of polycrystalline silicon instead of amorphous silicon.

Brief Summary Text - BSTX (6):

If the semiconductor layer of a TFT is formed of polycrystalline silicon, it is possible to manufacture the TFT such that it has high mobility and a large on-current, and hence not only a pixel matrix circuit but also a driver circuit can be integrally formed on the same substrate. However, in the TFT using the polycrystalline silicon, a current leaking from a drain in an off state (that is, off current) is large, and hence, if it is used as the switching element of a matrix circuit, it can not hold the electric potential of the pixel electrode. Therefore, it has been a big problem to reduce the off current of the TFT.

Brief Summary Text - BSTX (8):

An underlayer film 11 made of a silicon oxide film is formed on a glass substrate 10. An amorphous silicon film is formed on the underlayer film 11 and is polycrystallized by applying an excimer laser thereto. The polycrystallized silicon film is patterned in a shape of island to form a semiconductor layer 12. A gate insulating film 13 made of silicon oxide is formed such that it covers the semiconductor layer 12. A metal film made of aluminum, tantalum, or the like is formed on the gate insulating film 13. A photoresist mask 14 is formed and the metal film is patterned in a predetermined shape by using the photoresist mask 14 to form a gate electrode 15 (see FIG. 9(A)).

Brief Summary Text - BSTX (9):

The photoresist mask 14 is removed and then impurities to be donors or acceptors are added to the semiconductor layer 12 by ion doping or by ion

implantation by using the gate electrode 15 as a doping mask, whereby impurity regions 16, 17 are formed in the semiconductor layer 12 in a self-alignment manner (see FIG. 9(B)).

Brief Summary Text - BSTX (10):

A photoresist mask 18 is formed which is wider in the direction of length of channel than the gate electrode 15. The length of a low-concentration impurity region is determined by the shape of the photoresist pattern 18 (see FIG. (C)).

Brief Summary Text - BSTX (11):

Impurities to be donors or acceptors are added to the semiconductor layer 12 by ion doping or by ion implantation by using the photoresist pattern 18 as a doping mask, whereby a source region 21, a drain region 22, and low-concentration impurity regions 24, 25 are formed in the semiconductor layer 12 (see FIG. 9(D)).

Brief Summary Text - BSTX (12):

The photoresist pattern 18 is removed and then the impurities added to the semiconductor layer 12 are activated by applying laser light to the substrate or by heating the substrate. An interlayer insulating film 27 comprising silicon oxide film is formed. Contact holes, that lead to the source region 21, the drain region 22, or the terminal part (not shown) of the gate electrode 15, are made in the interlayer insulating film 27. A metal film made of titanium or the like is formed and is patterned to form a source electrode 28, a drain electrode 29 and the lead wiring (not shown) of the gate electrode 15 (see FIG. 9(E)).